

15. (New) A method for forming an oxide film on the surface of a silicon substrate, comprising:

loading the substrate into a reaction chamber;

flushing the surface of the substrate with oxygen within the reaction chamber so as to uniformly terminate dangling bonds on the surface of the substrate with oxygen atoms;

chemically adsorbing a first reactant onto the terminated surface of the substrate by introducing the first reactant into the reaction chamber;

forming a film of an oxide material as a result of a chemical exchange or reaction of the chemically adsorbed first reactant and a second reactant by introducing the second reactant into the reaction chamber, wherein the oxide material includes of the oxygen atoms used to terminate the surface of the substrate.

16. (New) The method of claim 15, further comprising removing from the chamber any of the first reactant physically adsorbed into the terminated substrate prior to introducing the second reactant into the reaction chamber.

17. (New) The method of claim 15, wherein the thin oxide film is an aluminum oxide film.

18. (New) The method of claim 17, wherein the first reactant is trimethylaluminum and the second reactant is water.

19. (New) The method of claim 15, wherein an oxide material of the oxide film is one selected from the group consisting of TiO_2 , Ta_2O_5 , ZrO_2 , HfO_2 , Nb_2O_5 , CeO_2 , Y_2O_3 , SiO_2 , In_2O_3 , RuO_2 and IrO_2 .

20. (New) The method of claim 15, wherein an oxide material of the oxide film is one selected from the group consisting of PbTiO_2 , SrRuO_3 , CaRuO_3 , $(\text{Ba},\text{Sr})\text{TiO}_3$, $\text{Pb}(\text{Zr},\text{Ti})\text{O}_3$, $(\text{Pb},\text{La})(\text{Zr},\text{Ti})\text{O}_3$, $(\text{Sr},\text{Ca})\text{RuO}_3$, In_2O_3 doped with Sn, In_2O_3 doped with Fe, and In_2O_3 doped with Zr.

21. (New) The method of claim 15, further comprising removing an impurity layer adsorbed into or formed on the surface of the substrate before loading the substrate into the reaction chamber.

22. (New) The method of claim 15, wherein an intermediate compound is generated upon introduction of the second reactant into the reaction chamber to

form the oxide film, and wherein said method further comprises removing the intermediate compound from the reaction chamber.

23. (New) The method of claim 18, wherein CH_4 is generated upon introduction of the water into the reaction chamber to form the aluminum oxide film, and wherein said method further comprises removing the CH_4 from the reaction chamber.

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cancel

24. (New) The method of claim 15, wherein the dangling bonds on the surface of the substrate are uniformly terminated by repeatedly injecting gas including the oxygen at least twice.

25. (New) The method of claim 15, wherein the oxide film is a single atomic oxide film.

26. (New) The method of claim 15, wherein the oxide film is a composite oxide film.
